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Day : Friday
Date: 3/30/2007


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Time: 13:20:27

Inventor Name Search Result

Your Search was:

Last Name = ELBER

First Name = GERSHON

Application#	Patent#	Status	Date Filed	Title	Inventor Name
09887026	Not Issued	71	06/25/2001	Control of interactions within virtual environments	ELBER, GERSHON
09887040	7043695	150	06/25/2001	OBJECT POSITIONING AND DISPLAY IN VIRTUAL ENVIRONMENTS	ELBER, GERSHON
09901611	Not Issued	71	07/11/2001	Low bandwidth transmission of 3D graphical data	ELBER, GERSHON
10363220	Not Issued	41	03/06/2003	Method and apparatus for shape deformation and placement	ELBER, GERSHON
60233478	Not Issued	159	09/19/2000	Object relations and db experts in control of 3d environments	ELBER, GERSHON
60233479	Not Issued	159	09/19/2000	Arbitrary precise orientation specification for layout of text	ELBER, GERSHON
60233487	Not Issued	159	09/19/2000	Object position and permissions in a 3d environment	ELBER, GERSHON
60284901	Not Issued	159	04/20/2001	Advanced animation in 3D computer graphics in the world wide web	ELBER, GERSHON
60295802	Not Issued	159	06/06/2001	3D based user interface for indicators and meters and for real time display of dynamic data streams	ELBER, GERSHON
60667228	Not Issued	159	04/04/2005	3D animation and interactive graphics rendering using 2D computer graphics capabilities	ELBER, GERSHON

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1 [Technical session 8: compression, streaming, and retrieval of 3D objects: Optimized](#)

[mesh and texture multiplexing for progressive textured model transmission](#)

Sheng Yang, Chao-Hua Lee, C.-C. Jay Kuo

October 2004 **Proceedings of the 12th annual ACM international conference on Multimedia MULTIMEDIA '04**

Publisher: ACM Press

Full text available: [pdf\(2.55 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

An optimized scheme of multiplexing coded mesh and texture data to facilitate progressive transmission of 3D textured models is proposed in this work. The mesh and texture data of a 3D textured model are fed into their respective compression modules and represented by a series of levels of details. Then, for a given viewpoint, a rate-distortion surface can be generated based on the multiplexing of mesh and texture data in different details. The distortion is calculated by measuring the visual ...

Keywords: mesh-texture multiplexing, progressive transmission, rate-distortion surface

2 [Level set and PDE methods for computer graphics](#)

David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: [pdf\(17.07 MB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#)

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ...

3 [Realistic materials in computer graphics: Realistic materials in computer graphics](#)

Hendrik P. A. Lensch, Michael Goesele, Yung-Yu Chuang, Tim Hawkins, Steve Marschner, Wojciech Matusik, Gero Mueller
July 2005 **ACM SIGGRAPH 2005 Courses SIGGRAPH '05**

Publisher: ACM Press

Full text available: [pdf\(18.24 MB\)](#) Additional Information: [full citation](#), [references](#)

4 Error-resilient transmission of 3D models



Ghassan Alregib, Yucel Altunbasak, Jarek Rossignac

April 2005 **ACM Transactions on Graphics (TOG)**, Volume 24 Issue 2

Publisher: ACM Press

Full text available: [pdf\(10.73 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this article, we propose an error-resilient transmission method for progressively compressed 3D models. The proposed method is scalable with respect to both channel bandwidth and channel packet-loss rate. We jointly design source and channel coders using a statistical measure that (i) calculates the number of both source and channel coding bits, and (ii) distributes the channel coding bits among the transmitted refinement levels in order to maximize the expected decoded model quality. In order ...

Keywords: 3D graphics compression, error resilience, joint source and channel coding, media streaming, priority encoding transmission, progressive transmission, unequal error protection, virtual reality over IP

5 The elements of nature: interactive and realistic techniques



Oliver Deussen, David S. Ebert, Ron Fedkiw, F. Kenton Musgrave, Przemyslaw Prusinkiewicz,

Doug Roble, Jos Stam, Jerry Tessendorf

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: [pdf\(17.65 MB\)](#)

Additional Information: [full citation](#), [abstract](#)

This updated course on simulating natural phenomena will cover the latest research and production techniques for simulating most of the elements of nature. The presenters will provide movie production, interactive simulation, and research perspectives on the difficult task of photorealistic modeling, rendering, and animation of natural phenomena. The course offers a nice balance of the latest interactive graphics hardware-based simulation techniques and the latest physics-based simulation techni ...

6 Middleware for streaming 3D progressive meshes over lossy networks



H. Li, M. Li, B. Prabhakaran

November 2006 **ACM Transactions on Multimedia Computing, Communications, and Applications (TOMCCAP)**, Volume 2 Issue 4

Publisher: ACM Press

Full text available: [pdf\(1.16 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Streaming 3D graphics have been widely used in multimedia applications such as online gaming and virtual reality. However, a gap exists between the zero-loss-tolerance of the existing compression schemes and the lossy network transmissions. In this article, we propose a generic 3D middleware between the 3D application layer and the transport layer for the transmission of triangle-based progressively compressed 3D models. Significant features of the proposed middleware include. 1) handling 3D com ...

Keywords: 3D streaming, progressive compression

7 High dynamic range imaging



Paul Debevec, Erik Reinhard, Greg Ward, Sumanta Pattanaik

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available:  [pdf\(20.22 MB\)](#) Additional Information: [full citation](#), [abstract](#)

Current display devices can display only a limited range of contrast and colors, which is one of the main reasons that most image acquisition, processing, and display techniques use no more than eight bits per color channel. This course outlines recent advances in high-dynamic-range imaging, from capture to display, that remove this restriction, thereby enabling images to represent the color gamut and dynamic range of the original scene rather than the limited subspace imposed by current monitor ...

8 GPGPU: general purpose computation on graphics hardware



David Luebke, Mark Harris, Jens Krüger, Tim Purcell, Naga Govindaraju, Ian Buck, Cliff Woolley, Aaron Lefohn
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available:  [pdf\(63.03 MB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#)


The graphics processor (GPU) on today's commodity video cards has evolved into an extremely powerful and flexible processor. The latest graphics architectures provide tremendous memory bandwidth and computational horsepower, with fully programmable vertex and pixel processing units that support vector operations up to full IEEE floating point precision. High level languages have emerged for graphics hardware, making this computational power accessible. Architecturally, GPUs are highly parallel s ...

9 XVL: a compact and qualified 3D representation with lattice mesh and surface for the Internet



Akira Wakita, Makoto Yajima, Tsuyoshi Harada, Hiroshi Toriya, Hiroaki Chiyokura
February 2000 **Proceedings of the fifth symposium on Virtual reality modeling language (Web3D-VRML) VRML '00**

Publisher: ACM Press

Full text available:  [pdf\(753.66 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Computer graphics systems and CAD/CAM systems are widely used and an abundance of 3D-Data in various fields exists. However, based on the VRML technique, it is difficult to send such 3D-Data through the Internet, because of the large data size. Transmission of practical and highly detailed 3D-Data through the Internet becomes a primary requirement. Therefore, a compact and qualified 3D-Data representation method is greatly required. This paper describes XVL (eXtended VRML with Lat ...

Keywords: VRML, geometry compression, lattice mesh

10 Spatial augmented reality: a modern approach to augmented reality: Modern approaches to augmented reality



Oliver Bimber, Ramesh Raskar
July 2005 **ACM SIGGRAPH 2005 Courses SIGGRAPH '05**

Publisher: ACM Press

Full text available:  [pdf\(48.93 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This tutorial discusses the Spatial Augmented Reality (SAR) concept, its advantages and limitations. It will present examples of state-of-the-art display configurations, appropriate real-time rendering techniques, details about hardware and software implementations, and current areas of application. Specifically, it will describe techniques for optical combination using single/multiple spatially aligned mirror-beam splitters, image sources, transparent screens and optical holograms. Furthermore, ...

11 Facial modeling and animation



Jörg Haber, Demetri Terzopoulos

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: pdf(18.15 MB) Additional Information: [full citation](#), [abstract](#)

In this course we present an overview of the concepts and current techniques in facial modeling and animation. We introduce this research area by its history and applications. As a necessary prerequisite for facial modeling, data acquisition is discussed in detail. We describe basic concepts of facial animation and present different approaches including parametric models, performance-, physics-, and learning-based methods. State-of-the-art techniques such as muscle-based facial animation, mass-s ...

12 SwingWrapper: Retiling triangle meshes for better edgebreaker compression



Marco Attene, Bianca Falcidieno, Michela Spagnuolo, Jarek Rossignac

October 2003 **ACM Transactions on Graphics (TOG)**, Volume 22 Issue 4

Publisher: ACM Press

Full text available: pdf(176.57 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We focus on the lossy compression of manifold triangle meshes. Our SwingWrapper approach partitions the surface of an original mesh M into simply connected regions, called *triangloids*. From these, we generate a new mesh M' . Each triangle of M' is an approximation of a triangloid of M . By construction, the connectivity of M' is fairly regular and can be compressed to less than a bit per triangle using Edg ...

Keywords: Triangle mesh, geometry compression, remeshing, retiling, simplification

13 Statistical geometry representation for efficient transmission and rendering



Aravind Kalaiah, Amitabh Varshney

April 2005 **ACM Transactions on Graphics (TOG)**, Volume 24 Issue 2

Publisher: ACM Press

Full text available: pdf(16.46 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Traditional geometry representations have focused on representing the details of the geometry in a deterministic fashion. In this article we propose a statistical representation of the geometry that leverages local coherence for very large datasets. We show how the statistical analysis of a densely sampled point model can be used to improve the geometry bandwidth bottleneck, both on the system bus and over the network as well as for randomized rendering, without sacrificing visual realism. Our s ...

Keywords: Point-based rendering, network graphics, principal component analysis, programmable GPU, progressive transmission, quasi-random numbers, view-dependent rendering

14 Point-based computer graphics



Marc Alexa, Markus Gross, Mark Pauly, Hanspeter Pfister, Marc Stamminger, Matthias Zwicker

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available: pdf(8.94 MB) Additional Information: [full citation](#), [abstract](#), [citations](#)

This course introduces points as a powerful and versatile graphics primitive. Speakers present their latest concepts for the acquisition, representation, modeling, processing, and rendering of point sampled geometry along with applications and research directions. We describe algorithms and discuss current problems and limitations, covering important

aspects of point based graphics.

15 Session 6: Robust transmission of 3D geometry over lossy networks



Zhihua Chen, Bobby Bodenheimer, J. Fritz Barnes

March 2003 **Proceeding of the eighth international conference on 3D Web technology Web3D '03**

Publisher: ACM Press

Full text available: [pdf\(2.81 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

This paper describes a robust mechanism for transmitting 3D meshes over the Internet. TCP/IP is an excellent means for reliable transport over the Internet. However, multi-user, real-time graphics applications may find TCP transmission disadvantageous when reception of a mesh is time-critical. To improve speed one could use an unreliable transmission protocol. Yet typical mesh compression schemes increase the fragility of the mesh to lossy transmission. In this paper, we develop a hybrid method ...

16 Spatial augmented reality: Modern approaches to augmented reality



Oliver Bimber, Ramesh Raskar

July 2006 **ACM SIGGRAPH 2006 Courses SIGGRAPH '06**

Publisher: ACM Press

Full text available: [pdf\(2.45 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

This tutorial discusses the Spatial Augmented Reality (SAR) concept, its advantages and limitations. It will present examples of state-of-the-art display configurations, appropriate real-time rendering techniques, details about hardware and software implementations, and current areas of application. Specifically, it will describe techniques for optical combination using single/multiple spatially aligned mirror-beam splitters, image sources, transparent screens and optical holograms. Furthermore, ...

17 Exploiting perception in high-fidelity virtual environments: Exploiting perception in high-fidelity virtual environments



Additional presentations from the 24th course are available on the citation page

Mashhuda Glencross, Alan G. Chalmers, Ming C. Lin, Miguel A. Otaduy, Diego Gutierrez

July 2006 **ACM SIGGRAPH 2006 Courses SIGGRAPH '06**

Publisher: ACM Press

Full text available: [pdf\(5.07 MB\)](#) [mov\(68:6 MIN\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

The objective of this course is to provide an introduction to the issues that must be considered when building high-fidelity 3D engaging shared virtual environments. The principles of human perception guide important development of algorithms and techniques in collaboration, graphical, auditory, and haptic rendering. We aim to show how human perception is exploited to achieve realism in high fidelity environments within the constraints of available finite computational resources. In this course w ...

Keywords: collaborative environments, haptics, high-fidelity rendering, human-computer interaction, multi-user, networked applications, perception, virtual reality

18 Progressive compression for lossless transmission of triangle meshes




Pierre Alliez, Mathieu Desbrun

August 2001 **Proceedings of the 28th annual conference on Computer graphics and interactive techniques SIGGRAPH '01**

Publisher: ACM Press

Full text available: Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index](#)

 [pdf\(10.06 MB\)](#)

[terms](#)

Lossless transmission of 3D meshes is a very challenging and timely problem for many applications, ranging from collaborative design to engineering. Additionally, frequent delays in transmissions call for progressive transmission in order for the end user to receive useful successive refinements of the final mesh. In this paper, we present a novel, fully progressive encoding approach for lossless transmission of triangle meshes with a very fine granularity. A new valence-driven decimating con ...


Keywords: connectivity encoding, geometry encoding, levels of details, mesh decimation, progressive transmission, triangle mesh compression

19 [Video-based rendering: Video-based rendering](#)



Marcus Magnor, Marc Pollefeys, German Cheung, Wojciech Matusik, Christian Theobalt
July 2005 **ACM SIGGRAPH 2005 Courses SIGGRAPH '05**

Publisher: ACM Press


Full text available:  [pdf\(5.15 MB\)](#) Additional Information: [full citation](#)

20 [Geometric modeling based on triangle meshes: Geometric modeling based on triangle meshes](#)



Mario Botsch, Mark Pauly, Christian Rossl, Stephan Bischoff, Leif Kobbelt
July 2006 **ACM SIGGRAPH 2006 Courses SIGGRAPH '06**

Publisher: ACM Press

Full text available:  [pdf\(24.22 MB\)](#) Additional Information: [full citation](#), [references](#)

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IEEE JNL IEEE Journal or Magazine

IET JNL IET Journal or Magazine

IEEE CNF IEEE Conference Proceeding

IET CNF IET Conference Proceeding

IEEE STD IEEE Standard

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- ☐ 1. **Progressive coding of 3-D graphic models**
 Jiankun Li; Kuo, C.-C.J.;
Proceedings of the IEEE
 Volume 86, Issue 6, June 1998 Page(s):1052 - 1063
 Digital Object Identifier 10.1109/5.687829
[AbstractPlus](#) | [References](#) | Full Text: [PDF\(240 KB\)](#) IEEE JNL
[Rights and Permissions](#)
- ☐ 2. **Embedded coding of 3D graphic models**
 Jiankun Li; Kuo, C.-C.J.;
Image Processing, 1997. Proceedings., International Conference on
 Volume 1, 26-29 Oct. 1997 Page(s):57 - 60 vol.1
 Digital Object Identifier 10.1109/ICIP.1997.647383
[AbstractPlus](#) | Full Text: [PDF\(376 KB\)](#) IEEE CNF
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- ☐ 3. **Interactive exploration of distributed 3D databases over the Internet**
 Rossignac, J.;
Computer Graphics International, 1998. Proceedings
 22-26 June 1998 Page(s):324 - 335
 Digital Object Identifier 10.1109/CGI.1998.694283
[AbstractPlus](#) | Full Text: [PDF\(72 KB\)](#) IEEE CNF
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- ☐ 4. **Bit allocation for joint source and channel coding of progressively compressed models**
 Al-Regib, G.; Altunbasak, Y.; Mersereau, R.M.;
Circuits and Systems for Video Technology, IEEE Transactions on
 Volume 15, Issue 2, Feb. 2005 Page(s):256 - 268
 Digital Object Identifier 10.1109/TCSVT.2004.841638
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